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**PRE-APPEAL BRIEF REQUEST FOR REVIEW**Docket Number (Optional)  
**107176-00007**

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on \_\_\_\_\_

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Typed or printed  
name \_\_\_\_\_Application Number  
**09/864,376**Filed  
**May 25, 2001**First Named Inventor  
**Tadahiro OHMI**Art Unit **1763** Examiner **R. ZERVIGON**

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).

Note: No more than five (5) pages may be provided.

I am the

☐ applicant/inventor.☐ assignee of record of the entire interest.  
See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed.  
(Form PTO/SB/96)☒ attorney or agent of record. **59,068**  
Registration number \_\_\_\_\_☐ attorney or agent acting under 37 CFR 1.34.

Registration number if acting under 37 CFR 1.34 \_\_\_\_\_

  
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**JULY 11, 2007**

Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below\*.

☒ \*Total of **1** forms are submitted.

This collection of information is required by 35 U.S.C. 132. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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TECH/419299.1



**PATENT APPLICATION**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re the Application of:

Confirmation No.: 1605

Tadahiro OHMI et al.

Group Art Unit: 1763

Application No.: 09/864,376

Examiner: Rudy ZERVIGON

Filed: May 25, 2001

Attorney Docket No.: 107176-00007

For: PLASMA PROCESSING APPARATUS AND PLASMA PROCESSING METHOD

**PRE-APPEAL BRIEF REQUEST FOR REVIEW**

**Mail Stop AMENDMENT**

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

July 11, 2007

Sir:

The Applicants request review of the January 11, 2007, the period of time for reply having been extended to July 11, 2007. No amendments are being filed with this request. This request is being filed with a Notice of Appeal.

## **REMARKS**

Claims 1-9, 12-14, and 16-26 are currently pending in the application and are subject to examination. The outstanding Office Action is the eleventh Office Action in this application. Thus, this application qualifies for Appeal.

### **Rejections Under 35 U.S.C. § 103(a)**

Under 35 U.S.C. § 103(a), Claims 1-5, 7, 8, 9, 12, and 13 are rejected as being unpatentable over Tokuda et al. (U.S. Patent No. 5,134,965, hereinafter "Tokuda") in view of Otsubo et al. (U.S. Patent No. 4,985,109, hereinafter "Otsubo"), and Ohmi et al. (U.S. Patent No. 6,830,652, hereinafter "Ohmi"); claim 6 as being unpatentable over Tokuda, Otsubo and Ohmi, in view of Tsuchihashi et al. (U.S. Patent No. 6,109,208, hereinafter "Tsuchihashi"); claim 14 as being unpatentable over Tokuda, Otsubo, and Ohmi in view of Tsuchihashi and further in view of Masaaki et al. (U.S. Patent No. 6,109,208, hereinafter "Masaaki"); and claims 16-26 as being unpatentable over Tokuda and Otsubo in view of Ohmi. The Applicants submit that this rejection is made in error for at least the reasons set forth below.

#### **A. Omission of Essential Elements Needed for a Prima Facie Rejection**

Applicants' invention as set forth in claim 1 is directed to recite a plasma processing apparatus for processing an object using a plasma, comprising, among other features, a microwave radiating antenna having a microwave radiating surface and a dielectric body provided so as to be opposed to the microwave radiating surface, wherein **no additional microwave radiating antenna is placed between the microwave radiating antenna and the dielectric body**, and wherein a **distance D between the**

**microwave radiating surface and a surface of the dielectric body facing away from the microwave radiating surface, which is represented with a wavelength of the microwave being a distance unit, is determined to be in a range satisfying an inequality  $0.7 \times n/4 \leq D \leq 1.3 \times n/4$  (n being a natural number), and wherein one end of the standing wave is positioned on the plasma exciting surface.**

The Applicants submit that the applied prior art fails to teach or suggest all the elements of the presently claimed invention.

Tokuda teaches an arrangement with **two** slot antennas 32 and 34. One slot antenna 32 is in contact with the upper surface of a quartz plate 5, while the other slot antenna 34 is disposed above the slot antenna 32 with the distance t being provided between the two antennas that is set to be an integral multiple of half of the guide wavelength or a value near the integral multiple thereof. Thus, Tokuda merely teaches a distance between dual slot antennas, not a distance between an antenna closest to a dielectric body and the far surface of the dielectric body. Tokuda fails to mention a distance between the lower surface of the slot antenna 32 and the lower surface of the quartz plate 5, and there is no mention of the thickness of quartz plate 5.

The Applicants further note that the Office Action continues to cite 34 as the lower surface of the antenna and t as the distance D, even though claim 1 was amended to recite wherein no additional microwave radiating antenna is placed therebetween the microwave radiating antenna and the dielectric body. The distance between antenna 34 and quartz plate 5 includes intervening antenna 32, and distance t is the distance between antennas 32 and 34.

The Office Action cites Ohmi as allegedly teaching "In order to prevent the discharge, the thickness of the dielectric material shower plate 103 is determined so that the gap is located at a position of a node of the standing wave of the microwave electric field," (see Office Action, Page 4). However, the thickness of the shower plate 103 in Ohmi is determined only so that a node of the standing wave is positioned **within the gap 104 between the lower surface of the dielectric material separation wall 102 and the shower plate 103**, thereby preventing the discharge at the gap 104. There is no mention of the thickness of the dielectric material separation wall 102 of Ohmi, which allegedly corresponds to the dielectric body of the present invention.

Accordingly, even if combined with Tokuda (not admitted) Ohmi fails to contribute the missing relationship between the closest antenna and the far surface of the dielectric body of Tokuda.

Otsubo is cited as allegedly teaching a concentric slot antenna in a microwave plasma reactor having a number of slots formed and distributed in the microwave radiating surface where a part of the number of slots can be closed. Tsuchihashi is cited as allegedly teaching a similar microwave plasma generating device including plural slots in the peripheral direction of the shutter antenna. Neither Otsubo or Tsuchihashi, nor Masaaki cure the deficiencies of Tokuda and Ohmi as outlined above.

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. M.P.E.P. § 2143.03. For at least this reason, the Applicants submit that claim 1 is allowable over the cited art. For similar

reasons, the Applicants submit that claims 2, 7, 8, 16, 17, 23, and 24 are likewise allowable.

As Claims 1, 2, 7, 8, 16, 17, 23, and 24 are allowable, the Applicants submit that Claims 3-6, 9, 12-14, 18-22, and 25-26, which depend from allowable claims 1, 2, 7, 8, 16, 17, 23, and 24 are therefore also allowable for at least the above noted reasons and for the additional subject matter recited therein.

Accordingly, Applicants respectfully request withdrawal of the rejections.

### **Conclusion**

In view of the foregoing, reconsideration of the application, withdrawal of the outstanding objections and rejections, allowance of Claims 1-9, 12-14, and 16-26, and the prompt issuance of a Notice of Allowability are respectfully solicited.

In the event that this paper is not being timely filed, the Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension, together with any additional fees that may be due with respect to this paper, may be charged to Counsel's Deposit Account Number 01-2300, referencing Docket Number 107176-00007.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Sheree Rowe", is written over a horizontal line.

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